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SECTIONAL ASTIGMIA OR SECTIONAL ACCOMODATION

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Every little shadow has a movement all its own. Every little while some one scouts the possibility of sectional astigmia, and quotes a lot of Hebraic nonsense from the dark ages. One who will read, and interpret his reading into something besides words, will find his answer without having others interpret for him. Reading may come from the best literature as well as from the great book of Nature from whom the authors first read, and, let us hope, interpreted also. Let us read from both books.

If we depend upon subjectivism entirely, allowing our patrons to tell us what they see, or think they see, we are in no position whatever to form competent judgment, either with respect to astigmia of any form, or of any other refractive error, for that matter. Such evidence becomes "hearsay" in every sense of the term, and as such would not be admitted as legal evidence. The judge wishes to determine whether or not the witness **knows** a fact, or whether some one has reported a fact to him. Therefore we will rule out subjective methods until such time as evidence is all in. If positive evidence then agrees with hearsay, so much the better for hearsay, but if it disagrees, then subjectivism has still to prove its own case.

We have two instruments for objective refraction, the keratometer and the skiascope. The one, covering the corneal field, is so accurate that we may accept its findings without any question, provided we have had a reasonable experience in its use. It indicates the exact axis of greatest and least curvatures, as well as anomalous curvatures, should they exist. The axis of error can be learned with this instrument with much more exactitude than we can get it by any other means yet known. Its measurement is of the anterior refracting element of the eye, but when we consider that the power of the cornea, some 42 to 46 diopters, is 75% to 80% of the dioptral power of the eye as a whole, it is necessary to concede that the corneal curves are exceedingly important.

Tscherning has shown us that the posterior surface of the cornea may introduce slight differences from the anterior contours, but the very slight difference between the index of the cornea, 1.377, and that of the aqueous humor, 1.3365, or .0005, is negligible so far as our work is concerned. Therefore, when we have evidence from our keratometer that astigmia exists we may place that as a fact.

We need not here discuss the classifications of with-rule or contra-rule, since our concern is whether there is a toroidal surface or a spherical surface, together with the locations of the principal meridians. Pressure of lids, rubbing of the eyeball, or other nonsense we may brush aside. The lids may be compressed, as we all know, to produce a corneal astigmia, simply by "squinting" for a few moments, but such extra pressure would have to be exerted for months at a time to produce any effect whatever. This astigmia can be readily measured with the keratometer, and one can see it pass away in a second or so, on release of the eyelid.

Turning next to the skiascope we are prepared to gather still further evidence of astigmia, should it exist. When the whole astigmia of the eye agrees with that of the corneal astigmia we may say that the lens shows no evidence of asymmetry, but what shall we say when the total astigmia is either greater than that of the corneal error, or less? Certainly if corneal error is 1.50 and total error is 2.25, then there is a lenticular astigmia of .75; but if corneal error is 1.50 and total error is .50, then we have a lenticular error of 1.00. In the first instance the asymmetry of the lens augments that of the cornea, while in the latter case the asymmetry of the lens tends to overcome the difficulty which

the corneal asymmetry introduces. No one who has made careful use of both instruments, and has taken time to understand this chapter from the book of Nature, will contradict these statements. Our refraction sheets are replete with this evidence.

At this time it is proper to speak of the deduction we are warned to make from all keratometric readings, i. e., to empirically deduct about .50 when with the rule, and to either give exact readings, or to add .50 when against the rule. This is due to the angle alpha, by which we mean that the optical axis of the cornea is normally slightly out of line with that of the lens (figure 1).

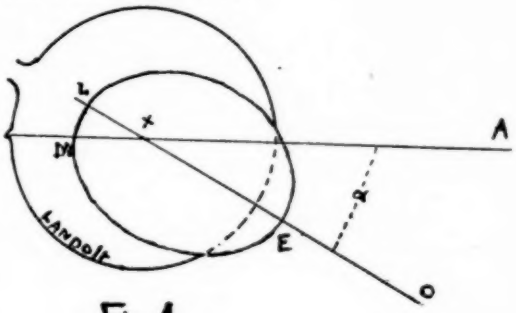

Fig. 1

Of very frequent occurrence is the non-agreement between the indicated axis of error of the cornea and of the total which we get from skiascopic tests. This disagreement is usually very slight, but occasionally it amounts to quite a number of degrees. Now the dioptral power of the lens in air is something like 110, but immersed in the media of the eye it is only about 16. It is readily demonstrable, by the use of a point of light reflected upon the cornea, the posterior and anterior surfaces of the lens, that the anterior-posterior axis of the lens is slightly out of line with that of the corneal apex (angle alpha), but unless this angle of deviation is quite large it will not account for even the common run of discrepancies between corneal and total astigmias. Moreover the plane of the angle alpha is nearly horizontal, so how shall we account for those discrepancies which are at variance with this plane? Some one suggests that it may be traumatic. All right, run down the case and find out. Possibly once in thousands of times there may be a record of a slight blow on the head, but nothing is proved from this when hundreds of other and severer blows have not produced any difficulty of this nature.

Moreover, we can see that anomalous accommodation is taking place both during static and dynamic investigation. Often the lens will so change during the static test that we can actually see a relocation of axis, but this can be perceived when we direct observation to the proximum and note a different axis. How shall we account for this? Clearly, the lens does not relocate, but it changes its refractive power in one meridian more or less than it does in another.

Here is a strange thing which happens, although not very often: The axis of greatest refraction at the proximum will vary quite a number of degrees from that of remotum fixation. This often accounts for a misfit in bifocals, as well as in other fittings. We are too apt to assume that the axis will be the same for proximum that it was for remotum. In most cases it is, but that is just what the science of optometry is for—to know. When there is a discrepancy of this nature, and it is far more often present than we believe, there is a wonderful opportunity to make a record worth while, if the consultant has been to some one who did not know of these conditions; or else there is a splendid opportunity to fall flat and lose perfectly good patronage because of not knowing or not "believing." Thus it pays to find out, and to **know.** It is for just this very reason that examinations should be conducted very slowly, carefully, and understandingly. Indeed two or three sessions are often desirable. This kind of work is **never** done "free," nor by the "dollar boy."

Come now to the often quoted phrase: "innervation from the third nerve." There is something lacking in this phrase, and the missing element is only the letter "s." If we had but learned to say "nerves" and to think plurally we would have saved ourselves many errors.

A trunk-line telephone cable runs past my office window, and if I were to think of **one** message over that cable which contains a large number of wires I would be thinking optometrically. On reflection we know that scores of messages may be flashing each way at every instant. Each wire carries a message, and each fibre of the third

"nerves" has its distinct function of transmission of neural energy from the nucleus, of which we shall speak presently. The "third nerve" is merely a convenient bundle just as the telephone cable is an easy grouping of wires which wish to get out of town with the least possible interference from wires leading crosstown and elsewhere. They simply don't want to be crossed up and get their messages entangled, if we wish to give them a personality. They want to get their job done without interference, so they cross streets, shoot under archways, plunge into subways, grab onto poles, and disport themselves just like our nerves which are sheathed up so that they may pass through fossa, sinus, foramen, tissues, or along a bone. They divide up into other nerve trunks, other nerve fibres and nerve trunks join in, and do the same stunts that men do with telephone wires and cables. Indeed we find that some nerve trunks carry both motor and sensory nerve fibres without prejudice to either. So when you think of a "nerve" just forget the name and think of a large number of wires which happen to be in a cable, for that is all a nerve is—just a cable full of wires; it is the wires themselves which give us chief concern.

What is a nerve? It is a conductor of something just as truly as is the metallic conductor, and it is encased in a sheath which is as truly an insulator as is the covering over any insulated wire. The neural sheath which covers the nerve fibre may also house a number of other distinct fibres right alongside it, and held in the middle of the tubular sheath by means of the "nodes of Ranvier." This sheath has an insulating substance which also acts in the capacity of insulation much as oil does in some electrical apparatus of high-tension current (figure 2). Nerve fibres conduct electricity very readily, although at a speed of only 36 to 60 meters per second, but we are not yet quite prepared to state positively that the neural impulse is an electrical impulse, for, you see, we don't yet quite know what electricity is, and how it is conducted. There is much yet to learn about the substance, its treatment, methods, and particularly how the body makes, uses, stores, and dissipates "energy." All force or power is the same, only we know of it in different phases. But for our purposes we will say that the nerve fibres conduct electrical energy.

Fig 2

We need not look further than we have been taught in our kindergarten of optometry to see that the "third nerve" terminates in the levator palpabrae, the orbicularis, the corrugator supercilli, the six motor muscles and the ciliary body. Here are ten different and distinct functions to perform, although there are more groups of fibres in the third nerve trunk which we will

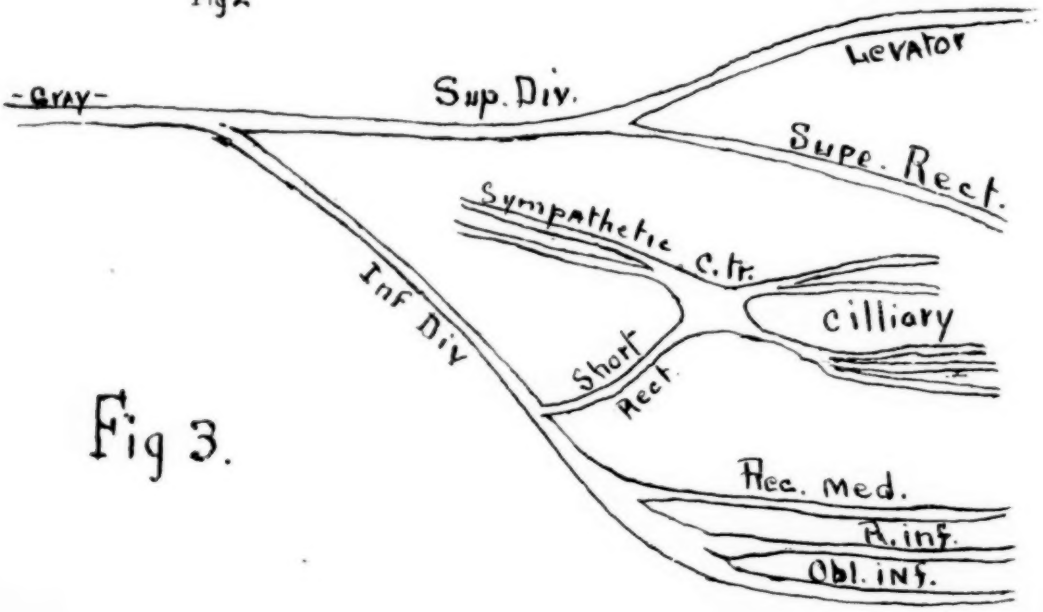

Fig 3.

not now discuss. But it is apparent that a simple impulse of "pull" on all these nerve fibres would constrict the muscles of the whole eye—and accomplish absolutely nothing. If all the recti pulled at once, both rotors, and the ciliary, what would happen? Things don't work that way (figure 3).

Now we know something of what a muscular fibre is, but if we would know more about it just take a piece of "bully beef" which has been corned, and pick it to pieces with a small needle. It can be broken up into threads as small as the floss of silk. Now, every muscular fibre has just one function to perform, two acts in its performance—one to contract on orders, the other to let go when orders cease. It takes these orders from its own fibre, and each muscular fibre has its own nerve fibre to obey, and only one. Moreover one nerve fibre has just one muscular fibre to control, and only one—provided always that it is a "motor nerve." (A sensory nerve has an entirely different function, although it may run part or all its course in a sheath parallel to motor fibres.)

Since there are hundreds upon hundreds, thousands upon thousands of muscular fibres in a "muscle," it is apparent that a nerve trunk must embrace thousands upon thousands of nerve fibres. Manifestly all these nerve fibres do not start from one point, but must originate in at least as many nuclei. Now, a nerve nucleus may be briefly likened to a battery from which energy is sent forth. We will not investigate these functions here, because of lack of space, but pass on to the place in the brain which we have heard so much about, the "nucleus of the third nerve," or Nucleus III, as it is called.

By this time we are prepared to think in rather large numbers, and of rather small things, but we must remember that there is nothing which Nature knows as "small" or "large." Figure 4 is a median section of the brain, showing location of Nuc. III in the base of the mid-brain. From this body all the motors of the eye originate, but we will not here take space to discuss the decussation of some of them across to the other eye, by which means one eye turns out as much as its mate turns in. That is for another chapter.

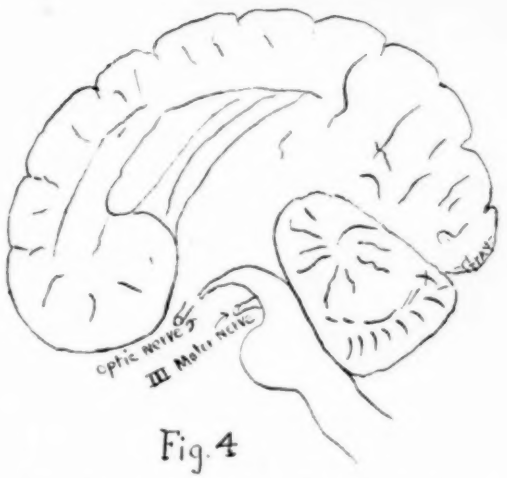

Fig. 4

We have said "nucleus," but we should again add an "s," this time making it nucleii, for there is a nucleus of each of the functions, external, internal, superior, inferior, troclear, inferior-oblique, the facial, and the ciliary. All these nucleii are grouped for convenience in this one place above the pons in the mid-brain, but they are all motor. Figure 5 is a schema of this mass of nerve cells, but there are simply millions where the picture shows a few dots. Now look at the grouping which shows two kidney shapes (number 4).

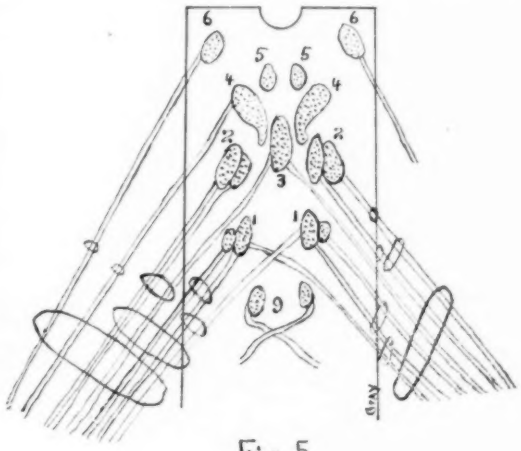

Fig. 5

These are known as the Edinger and Westphal nucleus, from their discoverers, or as E. W. nucleus; these are the origin of the ciliary nerves. Where we see a flat surface let us picture a funnel shape, and if we cut across the funnel we see the two sides of it as these two "kidneys" merely because it is a cross-section. While they are exceedingly small to us, yet Nature has plenty of room for millions of cells here, and from each cell there originates a motor fibre which eventuates

in a muscular fibre in the center of the eye some 10 centimeters distant. The other bean-shaped objects are nuclei for the other motor nerves which end up in the extrinsic muscles of the eyeball and the facial appendages of the eye. We have not time to discuss them either. No. 9 is the troclear which crosses over to the other eye just as a part of the optic nerve crosses over. We can readily see that there are many centers for the many functions.

Now, here is something we have not given the attention it deserves: Most of the mammals have very restricted eye movements. Man has the greatest latitude of all, and we find that the primates are capable of about the same movements. Movement of the eyeballs is a function that is not much older than the primates, which isn't very old as the world wags. One function of movement has developed at one time, in one species, and another has seen a greater development in another species, so that these various centers have grown up one at a time. This, too, is a long story that must be dropped for now. The next thing of striking importance is the fact that accommodation is a function which is rudimentary, even if not almost unexistant in many of the low orders. In no creature below primates and man is there any such latitude of accommodation, possibly something like 3 to 5 dioptres being the rule. Another too long story for now. But the lower orders have no occasion for accommodation because of their lack of maculae where sharp focus is needed. They make this up in being just as susceptible to the sense of motion of objects as they are to smell, but are about as deficient in focalization as man is to smell. It is merely a different order of development of sight which has progressed differently in various species.

Coming back to our problem of accommodation, we are prepared now to understand that accommodation, while associated with ocular rotations, is by no means so securely "locked" as was supposed a few years ago. The "locking-point" is only a figment of our imaginations. There is a close association, however, between accommodation and the rotations, and in some people the interlinking is much more strongly concurrent than with others. It depends very largely upon the nature of the person, just as some are sensitive to sounds, noises, and odors, so also others are not annoyed by anything.

Those who are keenly interested in the science of optometry will find some of its most beautiful chapters in books a long way from refraction. Some time in the dim future the writer has faith to believe that we shall give these things the study which they deserve and waste less time on empirical formulas. When we come to realize the intricate innervation of the eye and its brain connections we then begin to understand just why refraction is not such a simple thing as we have been taught to believe. Any one who has passed through the necessary studies to be able to handle optical formulae correctly, and has served a sufficient apprenticeship in school, under other refractionists, or in his own refractorium, so that he can deliver a perfect retinal image, has passed the first real milestone in his life. This is a good ten-year job, and a good job if he accomplishes it in ten years. After that he can either stand still at the post, or can make progress into the realm where real optometry lies.

It is not the eye which sees, it is the brain. When we have delivered a perfect retinal image we have no more completed our contract than has the manufacturer who dumps his wares at the railway platform. The goods must perform their work, or they are not "sold." We must deliver the function of vision, not merely an undigestible retinal picture. The amblyopic eye receives a perfect picture, but the brain does not get the message. It is our still further pleasure and duty to teach the eyes how, where, and why.

HEMISENSORY STIMULATION

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After the battle of Long Island a Continental officer died as a result of wounds; yet it is interesting to note that his biographer says of him: "Everything was done that could be done for him. But at three o'clock in the morning he yielded the ghost, notwithstanding the fact that the attending physician had administered a hundred grains of calomel during the night."

Calomel fell into disrepute.

Prisms have fallen into disrepute for about the same reason; the medics are now giving 1 grain of calomel for what it is good for, and it behooves us to reduce the dosage of prism and apply it only where it is needed.

Calomel came back. So can prisms.

Prisms are an ocular aid, just the same as minus lenses, plus lenses, or cylinders. Prisms are not needed in a great majority of cases, but occasionally they are of wonderful benefit. Every optical adjunct has its place, and to find the exact place for each becomes the fine point upon which reputation is builded.

No case should be passed without a test of the muscle powers, perhaps it would be best to say muscle equilibrium. No one can tell from symptoms whether it is hyperopia, or esophoria (for instance), or both. The patient has rights, and it is our duty to respect those rights. A muscle test is not at all difficult any more. With the Hemisensory Binoculometer instrument muscles are now tested at the same time the tests for ametropia are in progress.

Hemisensory stimulation has solved the problem of measuring eyes for equilibrium needs; it is one of the outstanding discoveries of the last fifty years in optometric science. It is the most unique, yet the simplest idea as to the manner of application. Anyone at all familiar with the use of a trial case can use it, and it reduces the work to such simple terms that comfortable glasses can be prescribed with little knowledge of the actual complexities of musculature and innervations.

Hemisensory stimulation is just what the name implies. The lower part of the object chart stimulates the upper portion of the sensory area of the one eye, while the upper part of the chart stimulates the lower portion of the sensory area of the other; there being no imbalance, the chart is presented as one. If there be esophoria, the upper half is diverted to the right, while exophoria diverts the upper half to the left. Hyperphoria is similarly revealed. The very slightest deviation from the comfortable normal is clearly, unmistakably presented to the patient; and with such simplicity that there is never any misunderstanding as to what the patient is beholding.

Three cuts are shown that the reader may see the view that the patient is called upon to report. Be it remembered that as many observations as you desire can be taken throughout the conduct of a case; with no lenses a first notation can be made; as the work goes forward a mere query will bring the patient's answer as to the position of the lines. If the correcting lenses are removing the muscle imbalance, or if they are not removing or affecting the original imbalance (or balance, as the case may be), it all has a bearing on what you are going to prescribe; for if eight degrees of esophoria has disappeared with the application of three diopters of plus, it would be unseemly to apply prisms; and if it turned out that eight degrees of esophoria became nine degrees with three degrees of plus (and the plus was necessary to give clear vision), it would be a mighty good plan to turn your attention to the correction of the esophoria.

Viewed from another angle, the method renders the subjective tests for ametropia so much easier, to both doctor and patient, that its use is advisable; and, thus, if the method is adopted muscle deviations will be forced upon the refractionist, whether he will or not.

Deception enters into every other oldtime muscle testing method. It was either doubling or trebling of the

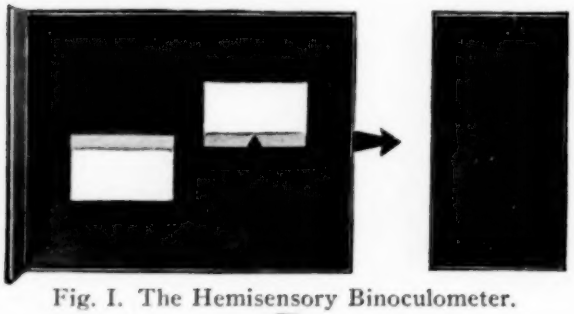


Fig. I. The Hemisensory Binoculometer.

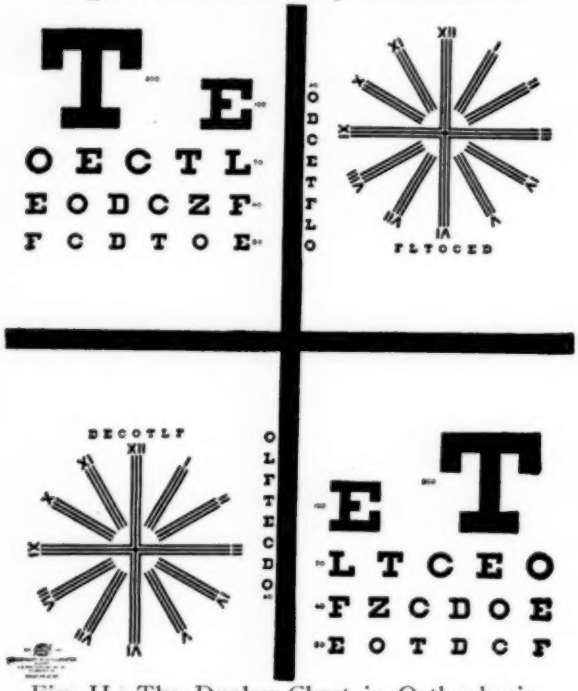


Fig. II. The Duplex Chart in Orthophoria.

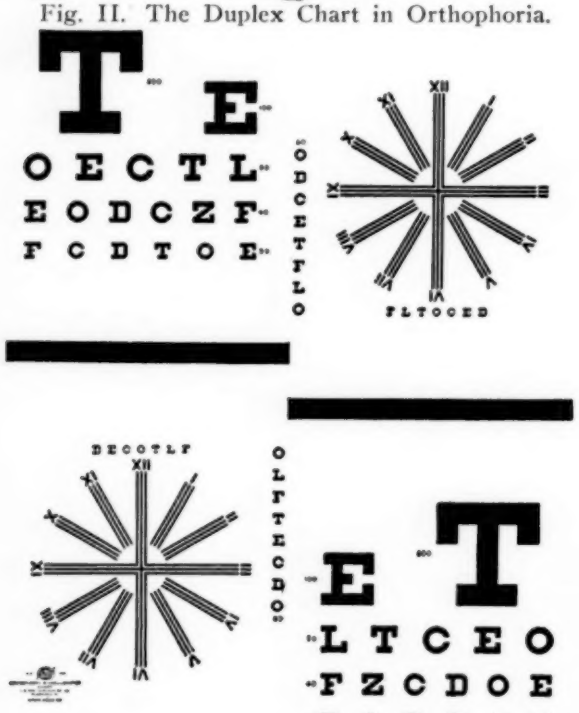


Fig. III. The Duplex Chart in Right Hyperphoria.

images, rendering them dissimilar. Under the most abnormal conditions the eyes were asked to behave normally. And because they did not behave normally, there has grown up a maze of "theories," and "rules," and "beliefs."

Hemisensory stimulation allows the eyes to calmly look at a normal test object. Whether concentrating upon the top or bottom of the chart, the mind is not conscious of any deception. A normal healthy tone is always manifested by the chart appearing as one single chart; steady nerves are always revealed by the chart steadily holding as one unmoved single chart, while if the chart's halves waver, it depicts vacillating nervous energy. Often it will be found that a weak correction of hyperopia or myopia will cause the nervous disturbances to quiet. **It actually gives diagnostic data throughout a case.**

The discovery of hemisensory stimulation was not an accident; it was under constant surveillance for fifteen years. The improved instrument has now been in actual use for about a year.

Do I fit prisms in every case where imbalance exists? No, emphatically, no! I fit prisms only where ocular symptoms seem to demand it. You know the symptoms—red, inflamed lids and eyeballs, headaches, pains in and

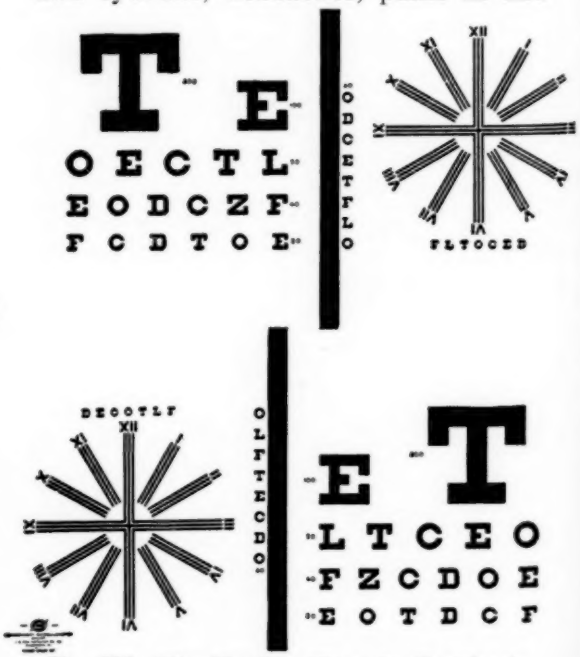


Fig. IV. The Duplex Chart in Esophoria.

about the eyes, photophobia, profuse lacrymation, limited range at the near point, etc., etc.

Do I find more exophoria than esophoria? No, positively, no. Esophoria prevails almost ten to one. Is exophoria always associated with myopia? Generally, or with mixed astigmatism. Does esophoria disappear when the proper plus is in place? If you mean by "proper plus" the lens power that gives perfect sight, then I shall tell you that I have found perhaps sixty per cent of esophoria to be accommodative; this may be taken to mean that in forty per cent of cases I have met with, fogging would have proved inadequate. In a very high percentage it was discovered that exophoria was due to a hypertonus of the external recti, caused by the fusion sense being so powerful as to overdo the call for resistance to the interni.

Is a duction test always valuable? Yes, if you wish to know how much it takes to kill a patient. I personally have four or five D. of abduction, and sixty D. of adduction; yet the H. B. test reveals six D. of exophoria at twenty feet, and twenty D. at sixteen inches. This is purely a case of hypertrophied muscles causing inordinate adduction. I also have hyperphoria amounting to four D. and the correction of the hyperphoria and exophoria with prism segs has solved a lifetime of misery.

Plenty of cases have been noted where not the slightest signs of phorias were present; duction tests fell far below the "allotted" amount; these patients had never been conscious of their eyes till presbyopia had come to them. The correction of the presbyopia did not set up the slightest muscular difficulties.

So, at the end of a year, I am ready to state that hemisensory stimulation has no doubt solved many of our difficulties.

So many inquiries have been received that it may be well to relate how I proceed to **apply prisms to a case.**

Since esophoria calls for prism base out (or apex in), it is desirable to have a method to find how much can be most successfully given.

Suppose the patient has fifteen degrees of esophoria as shown by the H. B. test, and the symptoms decree that prism correction is advisable. I direct the patient to look straight ahead at the chart, the wall, etc., and I steadily turn the rotary prism in the required direction, until the patient advises that objects are distorting, and that the wall looks like inside of a large hemisphere, i. e., the center seems to bulge away from the patient; in exophoria it will appear as the outside of a hemisphere, or the center will bulge toward a patient as the prism power is turned base in. I then have him tell me when the distortion ceases as I turn the rotary prism to reduce the amount I had base out; this gives me two figures—the amount it requires to produce considerable distortion, and the amount that does not produce distortion. I apply about one-third to one-half of the amount that does not distort, base out, in esophoria, and the same rule holds good with exophoria. However, I also make the same test at sixteen inches, and if it requires a smaller amount to cause distortion at the near distance than at the twenty-foot distance, naturally I make use of the near point findings to determine prism power I will give the person; it is plain that the amount given should not cause inordinate distortion, and if distortion is created by a smaller amount at near than at distance, then common sense dictates that the smaller amount should prevail.

Hyperphoria generally accepts gratefully the full correction, unless it amounts to over three or four degrees; I then make about a two-thirds prescription, with instructions to call in a month for a re-examination.

Cyclophoria almost always disappears with the correction of hyperphoria, and the full plus correction.

Hemisensory stimulation does not stimulate accommodation and convergence to the point of discomfort; it stops just short of discomfort. It reveals the latent reflex error, or shortage, and it gives us something tangible to work with.

PRACTICAL NOTES AND CURRENT REFRACTIVE TOPICS

R. M. Peckham, Opt.D., F.A.A.O.

FRAMES FOR SMALL CHILDREN

In fitting glasses to small children, especially girls, the bridge crest should not rest on the nose. For the constantly sustained weight resting on the bridge of the nose will not only press into the still soft bone and make a hollow, but it will also prevent the development and normal growth of the nose, make a permanent ridge or depression. No one should be guilty of doing anything that will permanently disfigure a child.

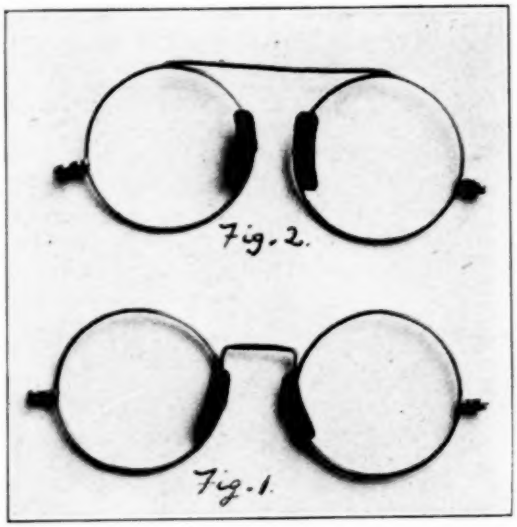
To avoid this the writer makes handmade frames for the little folks, after the designs here illustrated. Slight variations of style may be developed to fit the features of the individual. The hoop in Fig. 1 may be squared, rounded, flattened, given a Grecian bend, or any other little twist that will assist in making it fit better or look better. Similarly, the cross bar in Fig. 2 may be altered to fit circumstances.

We take an 0 eye or 00 eye filled frame, unsolder the bridge, and at the points where the bridge was originally soldered we now solder Wells' X guards. Then the hoop or cross bar is soldered on, its length depending on the width of the child's nose.

Zylonite blades, 15 to 20 mm. long and 5 to 7 mm. wide, are attached to the guards. For temples, I personally prefer the half length artshell, the visible portion being the roundside gold-filled temple and the curve covered with crystal zylonite.

In adjusting, bend the guards well back, and shape them to rest flat on the sides of the nose, curving exactly to the nasal contour. They must be so adjusted that the spectacle weight is as widely and evenly distributed as possible. The zylonite guard blades can be clipped away at corners, curved on sides if necessary, to avoid any indentations on the tender skin.

This type of frame lends itself to readjustment in different positions. From time to time, at frequent intervals, the child should be given the treat of an entirely new adjustment, setting the guards at a different spot, otherwise we shall have the trouble we have been working to avoid, the mutilation of the nose. By slightly altering the angle of the guards and temples, the weight can be thrown to new points.



It is a very good idea to make two or three pairs of glasses, to be worn alternately, when the circumstances of the parents permit the necessary financial outlay. Each frame should be of decidedly different design and pattern, so that the pressure contacts of each frame lie at different spots on the nose. One frame might be made with the ordinary saddle bridge, but such a bridge should be a wide cylinder. The 5 mm. cylinder bridges regularly supplied by dealers do nicely, but at times it may be well to make by hand a bridge of 7 or 8 mm. width.

The cross bar and hoop in Figs. 1 and 2 is a round gold bar 1.2 mm. in diameter, and can be obtained at any manufacturing jeweler's.

Such care taken of a child will go a long way in establishing the optometrist's standing with the parents, family and friends of the child. If the optometrist thus demonstrates his forethought and scrupulous attention to details, he will win from that family a loyalty that will never die, that will be constantly expressed in the ref-

erence of new clients. A single case of a child properly cared for, a single display of intelligent interest, especially if the little patient is a girl, may result in hundreds of dollars being directed to the man who thus demonstrates his skill and desire for perfection.

R. M. P.

THE OPTICAL CENTER OF A BIFOCAL SEGMENT

Troubles with bifocals arise more from injudicious selection of the type of wafer than from any other one cause. Very little attention is given to the inhibiting effect of prism base down or the innervating effect of prism base up. The inferior recti play an important part in the act of convergence, more than is generally realized. The act of convergence is naturally in and down, instead of being directly inward. If we use a bifocal in which the optical center of the segment is below the point where the visual axis intersect the lens, we have a prism base down.

A prism base down over any muscle inhibits the nerve supply to that muscle, since the prismatic displacement of the object seems to be toward the prism apex and the eye is turned toward the apex and away from the base. So segments producing a prism base down hamper the act of convergence and interfere with easy reading, especially with those individuals whose convergence faculty is none too well developed.

In myopia and esophoria, repression of the convergence is valuable, such persons welcome the inhibiting effect of the bifocal with reading prism base down. But in hyperphoria and presbyopia with exophoria, special attention should be given to the location of the segment optical center, and it should be above the point through which the visual axis passes.

The formula for determining in advance the location of the reading optical center is very simple and easily memorized.

Let X represent the distance from optical center of upper to the optical center of the lower, which is the information we want.

Let D represent the distance from optical center of upper to top of wafer; W, the diameter of the round wafer from which a segment is cut; A, the power of the addition; R, the total reading strength.

Then; $$A\left(D+\frac{W}{2}\right)\div R=X.$$

For example, Dist. + 1.00, add +2.00. To be made as a bifocal with the top of the wafer 2 mm. (.2 cm.) below the upper optical center.

Take an Ultex A, in which the segment is cut from a 38 mm. (3.8 cm.) wafer.

$$2\left(.2+\frac{3.8}{2}\right)\div 3=1.4 \text{ cm., or } 14 \text{ mm.}$$

That is, the optical center of the reading part of the bifocal is 14 mm. below the major optical center. Now, if the wearer habitually looks through a point 6 mm. below the major center, he is using a point 8 mm. (14 — 6=8) above the second optical center. The reading power being +3.00, the prismatic effect base down is .8 x 3=2.4 D.

Take the Ultex B or the Kryptok with a 22 mm. wafer, and working out the same formula, we find the answer is 8.4 cm. below the major optical center, with the base down effect only .72 D.

A safe guide is, when the addition is greater than the distance correction, or when the distance and addition are of equal power, use the round type of segments, as in Kryptok, Opifex, or Ultex B or L, if the patient shows any sign of poor convergence. When the distance correction is stronger than the addition (as +3 for dist., add 2), split segments can be used, for the lower optical center will be well up toward the top of the wafer.

But, as we have said before, the person with strong convergence ability is not going to be hampered so much by bifocals with a strong base down reading part as the one whose convergence is weak. In the case of decidedly poor convergence, there is an additional advantage gained in giving weak prisms base up on plain reading glasses and on bifocal segments as well.

R. M. P.

ABSTRACT DEPARTMENT

Optometric and ophthalmic journal articles and reprints to be abstracted should be sent to the editor. Only papers on subjects of interest to optometrists will be reviewed in this department.

Ferree, C. E., and Rand, G. An Apparatus for the Quick and Accurate Location of the Meridians of Astigmatism (Ill.). American Journal of Ophthalmology, Series 3, Vol. 8, No. 6, pp. 453-457. 1925.

The apparatus consists of a cylindrical metal lamp house, mounted on a tripod stand. Inside of the lamp house is a frosted tubular lamp to furnish the illumination of the test plate. Extending out from the lamp house is a short projection tube 9 cm. in diameter, on the end of which is fastened the test plate in a rotatable mount. The test plate is made of thin, hard sheet aluminum. Along one diameter of the test plate is a row of three small holes 17 mm. apart. One of these is at the exact center of the plate. Illuminated by the lamp inside of the housing, these holes present three bright points of light in exact alignment with each other. Also in exact alignment with these three points is a pointer which is bent at right angles over the ring in which the test plate is mounted. This pointer travels over a scale graduated to correspond to the scale of the trial frames. When viewed by an astigmatic eye the points tend to be drawn out into a line, the length of which depends upon the amount of astigmatism. When the meridian of the astigmatism is at right angles to the line in which the points lie, each short line formed by the elongation of one of the points will form a right angle with that line. If the meridian of the astigmatism is at 45 degrees with that line, the fact will be indicated by the position of the short lines which always lie in the meridian of the astigmatism or parallel to it; and when the meridian of the astigmatism coincides with the line containing the three points and the pointer which travels over the graduated scale, the three short lines, the points and the pointer will always lie in the same line. In order to aid the patient in identifying the line formed by the three points, it is continued to the edge of the test plate and to the pointer by a black arrow drawn on the plate. To locate the meridian of astigmatism the refractionist, under the direction of the patient, rotates the test plate until the alignment just mentioned is obtained. The diagnosis of the amount of the astigmatism consists, of course, in finding the cylinder which reduces the lines to points, or to circles in case the sphere correction has not already been made.

T. O. B.

Kiekenapp, E. Visual Tests for Motor Drivers. The North Carolina Optometrist, Vol. 1, No. 7, p. 4. 1925.

Kiekenapp favors the enactment of laws requiring all drivers to be licensed, and that they meet the following requirements:

"That the applicant is not blind in one eye; that the vision in either eye will not be less than 20-40 Snellen Standard with or without glasses; that the field of vision is not so restricted as to make quick perception uncertain; that double vision is not present; that the color vision test shall be normal in red, green, blue and yellow."

T. O. B.

Parker, J. W. The Oculometer (Ill.). The Optical Journal and Review, Vol. LV, No. 19, p. 46. 1925.

Parker describes the oculometer as an instrument devised to conveniently locate the axis in astigmatic cases and to assist in giving muscle treatments. The instrument, stereoscopic in form, consists of a headpiece in which are mounted a pair of horizontally adjustable spherical lenses in front of which can be placed loose prisms. A movable target, mounted with two astigmatic wheels, is placed on a grooved slide before this headpiece so that fixation can easily be made. The bed of the slide is graduated into dioptres. The instrument was made by Parker for use in his own practice.

T. O. B.

THE AMERICAN JOURNAL OF OPTOMETRY

Vol. 2 AUGUST, 1925 No. 8

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Original papers, scientific communications and correspondence should be addressed to the Editor. Books for review should be sent to Dr. E. O. Fjelstad. Clinical Reports and Society Proceedings should be sent to Dr. J. I. Kurtz. Practical Notes and Current Refractive Topics should be addressed to Dr. R. M. Peckham.

Annual Subscription Two Dollars in Advance. Single Copies 20c.

Copy of advertisements must be sent to Dr. Jack I. Kurtz by the tenth of the month preceding their appearance. Subscriptions, applications for single copies, communications with reference to advertising or other business, should be addressed to the Business Manager,

DR. JACK I. KURTZ, Room 209 Yeates Building, Minneapolis, Minnesota.

The Journal has no objection to the reprinting by other magazines of any of its articles, provided such reprints are properly credited to the American Journal of Optometry.

FUTURE OPTOMETRIC EDUCATION

The A. O. A., at the Louisville meeting, passed a resolution placing a maximum of two years on optometric education. We know the reason for this resolution but, nevertheless, consider it a grave mistake. Even as a counter resolution to the proposed action of others we cannot see how optometry is to be benefited.

For optometry to advance so as to be on a par with other professions we need a long course in colleges and universities capable of giving a well-balanced and far-reaching form of optometric education. An optometry course should not be confined within set boundaries, but should be well banked with the liberal arts and subjects of aid to the optometric practitioner.

By keeping the optometry course to a maximum of two years we are not advancing the profession, but are throwing it back into the quasi-professional class. And as a profession we must keep away from that. If optometry is to advance we need the longer courses.

Our suggestion is to "back" the existing, and continue to establish four- and five-year courses to be balanced in this way: The first two years to be given to a preparatory course similar in nature to the two-year pre-dental and pre-medical courses to be followed by two or three years of straight optometry. The first two years would be a liberal arts course to get mathematics, physics, psychology and such subjects before the student, which leaves the two or more years of optometry for purely optometric subjects. At this stage an academic degree could be given and, if so desired, another year could be added for clinical study, experimental and research work with the appropriate doctorates degree upon its completion.

This is not so far-flung nor so idealistic that it would be of any great harm and we doubt if a course of that nature would lead our young men into other fields, as many will say. But we can all agree that such a course in optometry would bring better men into the profession. We need to develop new leaders to replace those that in the natural turn of events and in the years to come will not be with us. By giving the coming men a sound and excellent foundation upon which to build, coupled with encouragement and advice from the men who are leaders now, we may yet see optometry resting upon a high pinnacle such as the

early workers for better optometry little dreamed and dared not imagine.

We have arrived at the point where optometry is no longer in its infancy but at the adolescent age when the extremest caution should be taken so as not to lose it entirely or to lead it into pitfalls from which it may never arise. The future is before us and we must try to look ahead. Set the goal and strive for it. If we fail we have done our utmost, and surely the goal cannot be of much account if optometry is to be restricted to a bare two years.

E. O. F.

THE EVIL OF GLAZED GOODS

The selling of glazed goods promiscuously to drug stores, novelty stores, jewelry stores, etc., is having a detrimental effect not only upon the profession of optometry but upon the optical trade as well. This important problem deserves a great deal of thought in order to find the proper solution to remedy this growing evil.

While trying to find this solution it would be well to first analyze as to who is responsible for this condition. Some would be inclined to place the responsibility entirely on the manufacturers; they contend that if the manufacturers would not produce and place these goods on the market, there would be no chance for this evil to develop into alarming proportions.

Others again blame the wholesalers, claiming that if the wholesalers would not distribute the "ready-made glasses" promiscuously, less harm would result. On the other hand it is claimed that the optometrists themselves are, to a certain extent, responsible for this condition. Not that some of them sell the glazed specs, but because no organized effort has been put forth by city, state or national association to combat this evil.

The three groups mentioned are all more or less responsible for the existing conditions and must all do their share to find a remedy for it.

Nearly all of the educational publicity carried on to make the "American Public Eye Conscious," whether this work is done by optometric associations, the "Eyesight Conversation Council" or other agencies, is neutralized by the wide distribution and sale of "ready-made glasses" especially in such places where no eye examination can physically or legally be performed.

The sale of glazed goods has a demoralizing effect on the "wholesalers," the "optometric profession" and the "public." All three groups suffer from this evil. Unfortunately the public is helpless in coping with this situation, because the layman can not easily differentiate between "ready-made" and prescription glasses. It is, therefore, up to the first two groups to remedy this condition.

What is the remedy? That has in a way been suggested at the last A. O. A. convention by one of the wholesalers, namely: "That the optometrists through their organizations inaugurate a general movement for the distribution of glasses through legitimate channels only, and that wholesalers comply with this request, and sell glazed goods to legalized refractionists only." This proposed remedy is not altogether impractical nor impossible. It would help not only to minimize this evil, but would pave the way to have it in time entirely eliminated.

The optometrist being the legalized refractionist, has a sacred trust to fulfill, that is, to effectively protect the eyesight of the public, and should take action in this case not only for the sake of protecting the profession, but also for the protection of the public as well.

J. I. K.

REFRACTIVE COUNSEL

Dr. R. M. Peckham, Optometrist, of 111 Bank Street, Waterbury, Conn., will answer in these columns questions regarding difficult refractive cases. Our readers are requested to send him full particulars of each case, which will be published along with the reader's initials only. These questions and answers will appear monthly. Also in this department Dr. Peckham would like to receive the accounts of unusual cases which have been satisfactorily handled, which will be published, if accepted, over the practitioner's name.

Question—Young woman aged 28. Wearing O. U. +0.50. Vision without lenses 20/20, each eye. Vision with +0.50, each eye alone, 20/20 but complains vision not quite so sharp with the two eyes together. No astigmatism. The right eye turns out occasionally, a divergent squint, then turns back into position. She says she is not conscious of its turning either out or in. Tried to make horizontal phoria test with Maddox rod, result not satisfactory. At times the streak would cut through the light, indicating orthophoria, then the light (seen by the right eye) would disappear. In making the vertical test, he found 2 diopters of right hyperphoria. She has been advised to have an operation performed, to keep the right eye from turning out, but she wishes to know if there is any way of curing this trouble without an operation. Is there?

Answer—You have a partial answer when you find that the pair of +0.50 spheres make binocular vision a trifle worse than monocular vision. If she has been wearing those lenses long, and has a convergence difficulty, those lenses have made matters worse, for by repressing the accommodation they have also inhibited the convergence.

The cause of the eye turning out is not muscular. It is not a "muscle" case. When the patient said that she was not conscious of the turning, either when the eye turns out or when it comes back into place, she made her own diagnosis. The disappearance of the right eye's image in the phoria test confirmed it. This is a case of right suspenopsia, the visual fields in the left brain stop functioning, and vision in the right eye is temporarily suspended. When this occurs, the right eye swings outward to its natural position of rest.

Barring functional disease, which is improbable, the case can be easily handled with innervational exercises, or, perhaps, to put it better, with "attention" exercises. Means must be employed by which the attention of the right eye and its visual centers in the left brain are consciously held, and by which the patient is notified when the suspension occurs, that she may consciously direct the attention of these visual fields to their task of recognition, or seeing.

If she is intelligent, and is really interested, so that she can and will give you assistance, most of the work can be done at home. Provide an ordinary hand stereoscope, and a set of Dr. Wells' stereo-exercise cards. Give her four or five of these at a time, selecting the easier ones at first, and exchanging them from time to time according to Wells' direction. Her task is to fuse these, and the right picture being different from the left, and the fusion by two eyes producing a third picture, she will know whether or not she is using the right eye.

Provide her also with a reading control as described in Wells' book, "The Stereoscope in Ophthalmology." Direct her to read with this in place for about half an hour a day, being sure that if at any time the control obstructs her vision so that words on the page are hidden, she shall hold her head perfectly still until the obstruction disappears. The bars of the control do not obstruct vision excepting when one eye suspends, so she is thereby made conscious of the suspension.

On your refractor rig up a stereo septum, or divider, copying the septum on the stereoscope. With prisms apex in give fusional exercises with the Wells' cards, twice a week, in addition to the work she does at home.

Give permanent prisms, with the apex in the innervating position, for constant wear to so innervate the inferior rectus of the right eye that the hyperphoria will finally disappear, which it will do as the fusion and attention centers become more efficient under the above treatment. As the right eye turns up when released from fusion, prism base down would only tend to further augment this trouble. Give about 1 diopter base up, over the

right eye, or ½ diopter base up to right and ½ diopter base down to right. This will stimulate the inferior rectus of the right eye and inhibit innervation to the superior, and after a few months these glasses can be entirely discarded.

The time required to effect a complete cure will depend on the patient and the interest she takes and the attention she gives to instructions. Perhaps six months, perhaps longer will be required. If you have a kratometer, it will be a great help in handling the case. Exercises should be given at the reading distance only, and five to ten minutes twice a week are sufficient. But the home work should be done daily, and 15 to 30 minutes be spent on it.

After some improvement has been noticed, and she learns how to control the eye, give her a pair of reading glasses to use 10 to 20 minutes daily, right eye 8 diopters base out, left eye plano.

As the real trouble lies in the lack of attention by the visual fields in the brain, an operation would be of no value whatever.

Question—Woman of fifty, bookkeeper. Wearing O. U. +2.00, add +2.00. Complains of difficulty with near vision. Careful examination shows that distance Rx is correct, but for reading she requires O. U. +2.00= +0.50 cyl. ax. 180. Positively refuses the cylinder at distance. Ophthalmometer shows 0.50 astigmatism against the rule. Made her reading glasses with the cylinders, but she wants bifocals. Can they be made with this combination of cylinder in the reading and sphere only for distance?

Answer—Yes, they can be made in cement form. Use —6 base meniscus or Punktals for the uppers, and order toric cylinder segments, add +2.50 sph. =—0.50 cyl. ax. 90. Any first-class prescription house can make them for you.

You will doubtless find that after she has worn these for a year or so, she will accept the cylinder in the distance lenses as well. It is evidently a case of sectional accommodation, and it is quite possible that will give way so that the eventual prescription will include +0.75 or +1.00 cylinders axis 180. R. M. P.

BOOK NOTICES

1. **The Routine Examination of the Eye.** By **Basil Lang.** London: Edward Arnold & Co. 1925. Price 6s net.

2. **Sight Testing (Funktionsprufung des Auges mit einem Anhang Physiologie und Pathologie des Pupille).** By **W. Wick.** Pp. 146 with 90 diagrams. Berlin: S. Karger. 1924. Price 5.40 marks.

3. **Refraction and Accommodation of the Human Eye (Refraktion und Akkommodation des Menschlichen Auges).** By **A. Siegrist,** Bern. Roy. 8vo., pp. 154 with 108 illustrations. Berlin: Julius Spring. 1925. Price gold mark 18.60.

4. **Contribution to the Psychology of Sight. An experimental peep into the unknown soul-life (Beitrage zur Psychologie des Sehens. Ein experimenteller Einblick in das unbeweisste Seelenleben).** By **Emil Berger.** With 4 figures and 8 stereoscopic plates. Munch: J. F. Bergmann. 1925. Price mark 1.80.

Our notices for this month are abstracted from those given in the British Journal of Ophthalmology, Vol. IX, No. 6, June, 1925.

The first book mentioned above is of the pocket size and of 152 pages. It is intended as an aid for students to read while actually engaged in clinical examining. It is well written and contains many useful tips.

Sight Testing is in the German with mathematical formulae at a minimum. It is reported that the ground is fairly well covered.

The book by Siegrist is the author's annual course of lectures in the University eye clinic in Bern, consequently primarily for students. In the exactitude of German science it gives a rule of thumb manner of refraction without the mathematical principles. It is very well written and useful to students.

Despite its odd title the last abovementioned book is claimed to be well worth perusal. It is of the pamphlet form and is a study on stereoscopic vision as concerning visual psychology. It also gives information on squint training. E. O. F.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

STATE EDITORS

E. B. ALEXANDER, Oklahoma
A. S. ANDERSON, North Dakota
D. A. KINNEY, Iowa
H. B. KOLLOFSKI, Minnesota

Reports of Society Proceedings in Iowa should be sent to Dr. D. A. Kinney, Charles City; in Minnesota to Dr. H. B. Kollofski, 211 Exchange Bank Building, St. Paul; in North Dakota to Dr. A. S. Anderson, Fessenden; and in Oklahoma to Dr. E. B. Alexander, Duncan.

NORTH DAKOTA SOCIETY CONVENTION

All arrangements have been completed and everything is in readiness for the twenty-third annual convention of the North Dakota Optometric Association at Mandan on the 3rd and 4th of August. There seems to be a widespread feeling of optimistic enthusiasm this year and every indication points to a record attendance.

The main feature of the convention will be the lecture by Dr. C. G. Mack of Minneapolis, president of the Minnesota Association. The subject of Dr. Mack's talk will be "Ocular Calisthenics."

A large share of the time will be given over to discussion on proposed changes in the optometry law. Ways and means of combating spectacle peddlers, mail order spectacles, and unethical practitioners, will also be discussed. Much interest has been manifested in this work and it is hoped that some effective means will be found to curb these evils.—A. S. ANDERSON, Opt. D., Secretary.

* * *

Dr. D. D. Sullivan of Fargo visited Dr. Anderson at his home in Fessenden to discuss plans for the coming convention.

* * *

Dr. C. G. Conyne called on Dr. Kornmesser in Jamestown in the early part of July to talk over convention plans.

* * *

The Completed Program

MONDAY, AUGUST 3, 1925

9:00 A. M. to 10:00 A. M.
Registration.
Payment of Dues.
Opening Address by President Kornmesser.
Secretary's Report.
Treasurer's Report.
Announcement of Committees.

10:00 A. M. to 12:00 M.
Business Session.

1:30 P. M. to 2:00 P. M.
Address of Welcome by President of Mandan City Commission.

2:00 P. M. to 3:30 P. M.
Round Table Discussion led by D. D. Sullivan.

3:30 P. M. to 4:30 P. M.
Election of Officers for the coming year.

5:00 P. M.
Optometric Golf Tournament at the Bismarck Country Club.

TUESDAY, AUGUST 4, 1925

9:00 A. M. to 10:00 A. M.
Business Session.

10:00 A. M. to 11:30 A. M.
Question Box and general discussion on optometric subjects.

1:30 P. M. to 3:00 P. M.
"OCULAR CALISTHENICS"
Lecture by Dr. C. G. Mack of Minneapolis.

3:00 P. M. to 3:30 P. M.
Questions and discussion on lecture.

3:30 P. M. to 4:00 P. M.
Unfinished Business.

4:00 P. M. to 5:30 P. M.
Automobile tour of points of interest in Mandan and Bismarck.

6:30 P. M.
Banquet at the Lewis and Clark Hotel.

OKLAHOMA ASSOCIATION OF OPTOMETRISTS

A Correction

I wish to ask for a slight but important correction to an article which appeared in your July issue, headed "A Post Graduate Clinic in Oklahoma," under the statement, "Regarding equipment we are deeply indebted to the American Optical Co.," and further on, "also to the Riggs Optical Co.," etc.

I am asking for a correction or addition to this in fairness to all parties and make this statement and explanation.

The Oklahoma P. G. Clinic, I believe, was the first to take up the plan of running a double clinic, one where the public might have their eyes examined and the other an educational clinic for the optometrist.

We had two completely equipped refracting rooms which were equipped with all the latest instruments and appliances which a modern ideal refracting room should have.

This equipment was furnished through the kindness and courtesy of the American Optical Co. and the Riggs Optical Co. of Oklahoma City.

We are deeply indebted to these two wholesalers for their loyalty and support and that of their representatives who so kindly lent every assistance to make our clinic a success.

Our three-day clinic was such a wonderful success that we are even now planning through the Oklahoma Association a series of public clinics to be held in all parts of the state with an educational clinic as a follow-up sometime later in the fall. With the experience we have had we feel that clinics are one of the biggest possibilities for advertising optometry to the public at large that we have ever developed.

Not alone is it a big thing from an advertising standpoint, but from an educational point of view it gives our optometrists an opportunity to freshen up on technique and get new ideas for giving better optometric service to their patients.

I do not feel that Dr. Farmer's intentions were to play favorites by the manner in which he wrote up the article in regards to equipment furnished by both parties; I feel that it was just an error, but that it

should be corrected, for both wholesalers furnished a like amount of modern equipment and one deserves as much credit as the other, and we feel deeply indebted to them and do not wish any article in regard to our clinic to show favoritism as the one printed undoubtedly did.—V. E. BOWERS, Opt. D., President.

Secretary's Bulletins

Secretary Alexander mailed out two bulletins during the past month. The first stressed the need for further additions to the optometric fund and the second pointed out the need for co-operative action in the necessary work of educating the public in eye conservation. He says in part:

"Thousands in your community are walking the streets half blind and don't know it. Thousands are wearing improper glasses and do not know it. Thousands are suffering from headaches, nervousness, etc., and do not know that defective eyes are the direct cause of their trouble.

"The only correction for defective eyes yet known is glasses. The optometrist is the specialist in the fitting of glasses. It is the duty of the optometrist to educate the public to the necessity of taking care of their eyes, of wearing glasses. * * *

"Optometry is a profession, and a profession must be very careful how it advertises. Otherwise its advertising may do more harm than good.

"Personal display advertising by a professional man is no good. It smacks of quackery. The public looks upon it as a commercial proposition, and even though the statements in the advertisement are absolute facts, the reader discounts them 90%. Group advertising or publicity is our only solution. It has been tried with wonderful success.

"The public is not interested in optometry, but it is vitally interested in its eyes. It is not especially to our interest that a person should be able to pronounce optometrist correctly and be able to give the technical definition of optometry, but it is to our interest that the public should associate **eyes** with **optometrist** and that said public should take their **eye** troubles **to** an optometrist. We cannot educate them to this proposition by direct advertising, but we can do it by indirect means. We must talk about eyes and eyesight conservation. Something that the public is interested in, and bring the optometrist in as a secondary proposition. This method will get the desired results. It is doing it where it is being used."

Department of Education

Dr. W. S. Farmer, chairman of the Department of Education of the Oklahoma Society, also circularized the membership with a bulletin which will be printed in full in another department. This bulletin stressed the need of careful planning of the civic and social side of the optometrists' lives.

THE CONNECTICUT OPTOMETRIC SOCIETY

At the regular quarterly meeting of the Connecticut Optometric Society, held in Waterbury on July 7th, the following resolution was presented and adopted:

Whereas, The American Optometric Association, with which this society is affiliated, has safely passed through a period of internal dissension and strife, and its continued existence is due only to the wisdom, patience, forbearance and self-sacrificing efforts of the officers and trustees who were in charge of its welfare during the past year, be it

Resolved, That the Connecticut Optometric Society desires to express its gratitude to, and its appreciation of the labors of these officers and trustees, and that the secretary is hereby directed to make a permanent record of this resolution and to publish the same in the Optical Journal. The Optometric Weekly, The Northwest Journal of Optometry, and The Western Optical World.

HAROLD E. JONES, Opt. D.

FLORIDA STATE OPTOMETRIC ASSOCIATION

The Florida State Board of Examiners in Optometry held a special meeting at the San Juan Hotel, Sunday, the 12th. Those attending were H. W. Grady, Fort Myers, President; Wm. F. Davey, Daytona, Secretary-Treasurer; K. K. Eychaner, Tampa, and K. J. Weihe, Ocala.

The Central Florida Optometry Association held its regular meeting at the office of Dr. H. H. Ramsdall, Sunday the 12th. President Mandeville made an interesting talk on publicity and repeated a talk he had given before the Rotary Club in which he brought attention to conserving vision, very nicely. Dr. Gordon Keene and Dr. Mandeville also gave some very interesting demonstrations with the retinoscope.

The next meeting will be held in Leesburg.

MINNESOTA ASSOCIATION TO CONDUCT MEMBERSHIP DRIVE

At the last executive meeting of the Minnesota Association, it was decided to carry on a state-wide membership drive. The drive will begin during the early part of August and will last one month. This will enable all registered men in the state, who are worthy of being admitted to membership, to join the Association before the initiation fee goes into effect. Beginning the first of the year 1926, a fee of $25.00 will have to be paid by all candidates wishing to join the Association. Delinquent members wishing to be reinstated will have to pay the regular initiation fee as new members. Secretary J. I. Kurtz mailed a letter to delinquent members urging them to pay up their dues now and called their attention to an amendment to the constitution, which requires that a suspended member pay the regular initiation fee before he can be reinstated.

The state will be divided into zones and leading optometrists will be appointed as zone chairmen and county captains. These appointments will be announced soon.

ADDENDUM

Dr. E. Fielding, author of a recently published paper on Anisometropia, wishes to add that in recent experiments he has been quite successful in prescribing multifocal lenses in anisometropia. The bifocal lenses used were those devised by Dr. Cross and Dr. Bugbee.